IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of processing a signal, comprising:

applying an algorithm to:

selectively negate a plurality of samples of the signal to provide negated and non-negated samples of the signal; and

use the negated and non-negated samples as in-phase (I) and/or quadrature (Q) components of a plurality of complex samples;

wherein the plurality of complex samples correspond to an output of an effective sampling function ~~to the signal~~; and

selecting a beat frequency of the effective sampling function by adjusting the algorithm;

wherein selecting a beat frequency of the effective sampling function comprises iteratively adjusting one or both of: a negation sequence in accordance with which samples comprising ~~the selection of~~ the plurality of samples of the signal ~~that~~ are negated and a sorting sequence in accordance with which samples comprising the plurality of samples of the signal are sorted into I and Q components, until a beat frequency resulting in an output having a desired characteristic is achieved.

2. (Original) A method of processing a signal as recited in Claim 1, further comprising sampling the signal to obtain the plurality of samples of the signal.

3. (Original) A method of processing a signal as recited in Claim 1, further comprising undersampling the signal to obtain the plurality of samples of the signal.

4. (Original) A method of processing a signal as recited in Claim 1, wherein the effective sampling function is a complex sampling function.

5. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Original) A method of processing a signal as recited in Claim 1, wherein the plurality of samples comprises a plurality of digital samples at a non-zero carrier frequency.

9. (Original) A method of processing a signal as recited in Claim 1, wherein the plurality of complex samples comprises a plurality of complex samples of the signal at baseband.

10. (Original) A method of processing a signal as recited in Claim 1, wherein the signal is a modulated signal.

11. (Original) A method of processing a signal as recited in Claim 1, wherein the signal is a modulated signal and the plurality of complex samples comprise a directly downconverted complex image of the modulated signal.

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Original) A method of processing a signal as recited in Claim 1, wherein each of the plurality of samples results in either an I component of one of the plurality of complex samples or a Q component of one of the plurality of complex samples.

17. (Original) A method of processing a signal as recited in Claim 1, wherein each of the plurality of samples results in both an I component of one of the plurality of complex samples and a Q component of one of the plurality of complex samples.

18. (Currently Amended) A method of processing a signal as recited in claim 1~~, comprising:~~

~~applying an algorithm to:~~

~~selectively negate a plurality of samples of the signal to provide negated and non-negated samples of the signal; and~~

~~use the negated and non-negated samples as in-phase (I) and/or quadrature (Q) components of a plurality of complex samples;~~

~~wherein the plurality of complex samples correspond to the output of an effective sampling function; and~~

~~selecting a beat frequency of the effective sampling function by adjusting the algorithm;~~

wherein ~~applying the algorithm comprises sorting each of the plurality of samples to determine whether the sample will result in an in-phase (I) component or a quadrature (Q) component and~~ selecting the beat frequency of the effective sampling function comprises reversing the order of sorting to select a positive image or a negative image.

19. (Currently Amended) A method of processing a signal as recited in claim 1 ~~, comprising:~~

~~applying an algorithm to:~~

~~selectively negate a plurality of samples of the signal to provide negated and non-negated samples of the signal; and~~

~~use the negated and non-negated samples as in-phase (I) and/or quadrature (Q) components of a plurality of complex samples;~~

~~wherein the plurality of complex samples correspond to the output of an effective sampling function; and~~

~~selecting a beat frequency of the effective sampling function by adjusting the algorithm;~~

wherein adjusting the algorithm comprises modifying a beat coefficient.

20. (Previously Presented) A method of processing a signal as recited in Claim 19, wherein adjusting the algorithm comprises modifying a beat coefficient "n" comprising an integer by which the rate of complex sampling events "T" is multiplied to yield the period of the beat frequency of the effective sampling function.

21. (Previously Presented) A method of processing a signal as recited in Claim 19, wherein the plurality of complex samples includes a baseband signal having a bandwidth, and the effective sampling function includes a beat frequency greater than one half of the bandwidth.

22. (Currently Amended) A ~~complex sample generation module configured to~~ signal processing system, comprising:

~~apply an algorithm to:~~

an inverter configured to selectively negate a plurality of samples of a signal to provide negated and non-negated samples of the signal; and

a first low pass filter configured to use a first set of selected ones of the negated and non-negated samples as in-phase (I) ~~and/or quadrature (Q) components~~ of a plurality of complex samples and a second low pass filter configured to use a second set of selected ones of the negated and non-negated samples as quadrature (Q) components of the plurality of complex samples;

wherein the plurality of complex samples correspond to the output of an effective sampling function;

and further comprising a processor configured to select a beat frequency of the effective sampling function by adjusting the algorithm, including by iteratively adjusting one or both of: a negation sequence in accordance with which samples comprising the plurality of samples of the signal are negated and a sorting sequence in accordance with which samples are sorted into I and Q components, until a beat frequency resulting in an output having a desired characteristic is achieved~~;~~

~~wherein the complex sample generation module comprises a negation module configured to selectively negate selected samples and a sorting module configured to sort the negated and non-negated samples as I and Q components~~.

23. (Canceled)

24. (Canceled)

25. (Currently Amended) A ~~complex sample generation module~~ signal processing system as recited in Claim 22, further comprising an analog to digital converter configured to generate the plurality of samples of the signal.

26. (Currently Amended) A ~~complex sample generation module~~ signal processing system as recited in Claim 22, ~~wherein the complex sample generation module comprises~~ wherein one or

more of the inverter, the first low pass filter, and the second low pass filter comprise a field programmable gate array (FPGA).

27. (Currently Amended) A ~~complex sample generation module~~ signal processing system as recited in Claim 22, wherein ~~the complex sample generation module~~ wherein one or more of the inverter, the first low pass filter, and the second low pass filter, and the processor comprises an integrated circuit.

28. (Canceled)

29. (Currently Amended) A computer program product for processing a signal, the computer program product being embodied in a computer readable medium and comprising computer instructions for:

applying an algorithm to:

selectively negate a plurality of samples of the signal to provide negated and non-negated samples of the signal; and

use the negated and non-negated samples as in-phase (I) and/or quadrature (Q) components of a plurality of complex samples;

wherein the plurality of complex samples correspond to an output of an effective sampling function; and

selecting a beat frequency of the effective sampling function by adjusting the algorithm;

wherein selecting a beat frequency of the effective sampling function comprises iteratively adjusting one or both of: a negation sequence in accordance with which samples comprising ~~the selection of~~ the plurality of samples of the signal ~~that~~ are negated and a sorting sequence in accordance with which samples comprising the plurality of samples of the signal are sorted into I and Q components, until a beat frequency resulting in an output having a desired characteristic is achieved.